CHARACTER-BASED LEARNING MANAGEMENT OF PHYSICS:

A SITE STUDY AT SMK MUHAMMADIYAH 1 BLORA

Article

Submitted as Partial Fulfillment of the Requirements
for Getting Master Degree of Education
in Educational Management Department

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2013

APPROVAL

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ABSTRACT

This study entitled Character-Based Learning Management of Physics: A Site Study at SMK Muhammadiyah 1 Blora has expected goals: 1) to describe the character-based learning plan of physics, 2) to identify character-based learning implementation of physics, and 3) to describe the character-based learning evaluation of physics in SMK Muhammadiyah 1 Blora, 2012/2013 year academic.

Research approach is ethnography qualitative. Data collection methods included observation, interviews, and documentation. Validity of the data obtained with the persistence of observation, triangulation, examination peers through discussion, and detailed description. Techniques in an interactive data analysis through the collection process reducing, presenting, and draw conclusions.

The research result can conclude that organize physics learning in SMK Muhammadiyah 1 Blora by using learning plan that arrange sistematicaly. Learning plan consists of syllabus and lesson Plan (RPP). The syllabus is arranged by team physics teacher at school before the new school year, While lesson plan is arranged by each physic teacher with include character education base on material given and based on condition with school condition. Learning Implementation base on RPP that is made by teacher, with always gives character values base on learning material given provided by the teacher and familiarized in their daily lives. Learning implementation process was done by giving and developing character consist of sistematicaly learning, active, creative, effective, interactive, and communicative, so we can get the values from student learning physic easily, student feel appreciate, attention, trained to solve problem, try to give ideas, and develop ability that they have. Learning evaluation include cognitive, affective, and psychomotor during and after the learning process.

Keywords: learning management, physics, and character-based

INTRODUCTION

The government expects the number of vocational schools up to 70% schools in Indonesia until 2015. The ultimate goal is to reduce unemployment and increase the number of skilled workers who are ready to absorb in the world of work. Today, developing of SMK is better, the ratio of the number of vocational schools has reached 50% or balanced with senior high school (SMA) (Soedibyo, majalahpretasi.blogspot.com/2009).

One of the biggest vocational school (SMK) in Blora is SMK Muhammadiyah 1 Blora. It is located 1 km from the town of Blora, precisely in the Kajangan village, Blora district. This school is located in an area of its private land and the width of this school is 8000 m^2 and the building is 7270 m^2. At first, this school only consists of 2 classes with automotive engineering technique, then it has light vehicle engineering and electronics engineering, and now it includes audio video technique. It has 41 classes consisting of 30 classes of light vehicles engineering and 11 classes of audio video technique. SMK Muhammadiyah 1 Blora has 1573 students, 67 teachers, and 23 administrative staff.

The time allotment for teaching learning process is in the morning and in the afternoon due to the limited workshop to practice. This becomes a problem for the teaching and learning process in SMK Muhammadiyah 1 Blora. Most students of SMK Muhammadiyah 1 Blora are from low economy and their houses are very far from the school. With the time study until 18:00 pm students returned to their house's late and was too tired to study. If the next day, they

should go in the morning, many of them are always late. Based on the evaluation score, their achievement is low, especially physics. So, it is necessary to manage learning, especially character-based of physics at SMK Muhammadiyah 1 Blora.

Based on the background problems mentioned, this research focuses on "How is the character-based learning management of Physics at SMK Muhammadiyah 1 Blora?", Which can be elaborated into 3 (three) sub focuses: (1). How is the character-based learning plan of physics at SMK Muhammadiyah 1 Blora? (2) How is the character-based learning implementation of physics at SMK Muhammadiyah 1 Blora? (3) how is the character-based learning evaluation of physics at SMK Muhammadiyah 1 Blora

Based on research focus above, the research has 3 (three) expected goals as the followings: (1) To describe the character-based learning plan of physics at SMK Muhammadiyah 1 Blora, (2) to identify the character-based learning implementation of physic at SMK Muhammadiyah 1 Blora, and (3) to describe the character-based evaluation of learning physics at SMK Muhammadiyah 1 Blora.

The writer hopes this research results have practical and theoretical benefits: (1) Practical benefit for: the principal of SMK Muhammadiyah 1 Blora can be as an effort to improve the learning of physics, teachers the writer hopes, the research result can be used to minimize or even to eliminate weaknesses in learning physics, and students, it can improve their achievement in learning physics. (2) Theoretical benefit: the results can be used as reference for

knowledge in educational management, and it can be used as reference research to develop research in Physics learning.

The management according Nurhadi (Arikunto 2008: 3), is an activity or activities series as a process group management of people who are members in educational organizations, to achieve educational goals previously set, to be effective and efficient.

According Gunawan (2012: 225-235), learning are:

The planning step of learning includes arrange syllabus, and lesson plan (RPP).

a. Syllabus

Contain of SK, KD, learning materials, learning activities, indicators of achievement, assessment, time allocation, and learning resources. In order to develop students characters, so it needs the addition or modification of three components:

1). the learning activities that develop character for example when measure with a ruler, so we will get value accuracy.
2). the indicator with student achievement in character as students can explain how the jack one of application in Pascal's Law, values are inculcated to think logically and creatively.
3). evaluation technique that can measure character development, such as the application of Bernoulli experiment, values instilled rigor, collaboration, creative thinking and logical.

b. Lesson Plan (RPP)

RPP is a short-term plan to estimate what will be done in the learning process.

There are two function of it:

1). planning function means for teachers to ready in preparing learning process.
2). Implementation functions of effectiveness learning process according to what was planned.

At this implementation step of learning activities include introduction, the point, and closures, that be done by students in practice the values of the targeted character. Teacher behavior

> during the learning process should be a model for character value to the student.
>
> The step of learning evaluation techniques and assessment instruments are selected and implemented not only a measure of academic achievement/ cognitive students, but also to measure the development of students' personality. As techniques for academic achievement and personality, I can use observation, self-assessment and peer assessment.

Physics is a natural science, the science of matter and energy such as heat, light, and sound; science that studies matter and energy and their interactions (Kamus Umum Bahasa Indonesia in diksonpondung.blogspot.com).

Character education is a process of transformation values of life to developed in one's personality become one in the behavior of the person's life Gaffar (Kesuma, et al., 2011: 5).

Maknum (2012) in his study entitled *Pembelajaran Fisika Sekolah Menengah Kejuruan (SMK) Bidang Keahlian Teknik Bangunan* in journal of education, states that vocational graduates are less able to develop of science and technology, it is difficult to trained again, and less able to develop themselves, to solve this introduced the theory of analytic National Competency Standards (SKN), analysis and preparation of vocational curriculum and learning programs to the test method it is used physics-based learning program that is productive learning physics connected application to productive subjects. The discovery earned the implementation of active student learning and teacher as facilitator, and improve the students' mastery of physics concepts. The weakness

of this study is demanding preparation of teachers and students, require a lot more time, availability of equipment and demanding physical practice.

Hamid (2011) in his book *Pembelajaran Fisika di Sekolah dengan Metode Iqra'* in the monograph book with ISBN: 978-602-99834-0-1 first edition, first printing try to overcome common problems, there are just learning physics contains a formula, exercises and homework so that students feel physics difficult, unpleasant and can generate creativity to find the laws of physics through experiments. The method used by the physics teaching methods to the theory iqra generic approach that is organized by stating the purpose in the realm of faith and piety, and the student activity sheets (LKPD) concludes with discussions regarding the development of the realm of faith and piety. The findings research are educating students to find concepts, theories and physics rules through experiments.

Rodrigues, et al., (2010) in his paper *"Planning Lessons: A socio-historical-cultural approach in physics teaching"* in the journal Science Educational International Vol. 21 Number 4 December 2010, 241-252 investigate the plane of physics teachers in the classroom and the consequences for the implementation in learning focuses on the contradiction between the expectations of teachers and students in the classroom. The theory which is used is component activity and the context in which students perform dialogic interaction with experiment. The method to be analyzed from the point of view of the social, historical and cultural. Research result said that to lack communication in the

classroom, so the important aspect of the way out is to make document in every moments in classroom situations, teachers' planning and the importance of dialogic interaction.

Blas and Fernandes (2008) in his work entitled *"The role of new technologies in the learning process: Moodle as a teaching tool in Physics"* on the journal homepage: www.elsevier.com/locate/ compedu do learning online Physics method to create online learning communities that help teachers and students have a virtual space where they can share knowledge through different kinds of activities *chats* and forums. Physics results with online learning helps students to strengthen skills and knowledge.

Fatik and Madlazim (2012) in his paper entitled *"Pengembangan Perangkat Pembelajaran Fisika dengan Lab Virtual Phet pada Materi Gelombang Elektromagnet di SMAN 1 Kutorejo"* in the journal Unesa using learning software development Phet Virtual Lab (Physics Education Technology) which is a site that provides learning physics simulation that can be downloaded for free for individual learning needs and in the classroom. This method is in the form of interactive simulations in virtual lab Phet with a fun and interactive simulation-based discovery in the form of software and is used to clarify physical concept or phenomenon that will be explained by teacher. The function of Phet Virtual Lab is as a substitute for the real lab, this is because in the laboratory in real need funds and complete equipments.

RESEARCH METHOD

This research is a qualitative study. The study design was ethnography. Ethnographic research is defined to build a systemic definition about all man cultures from the perspective of an individual who has studied the culture. The core of ethnography is the attempt of paying attention to the action meaning of the happening befalling the individual we want to know (Spradley, 2007: 5-13).

The study was conducted at SMK Muhammadiyah 1 Blora consider by it is easily reached by researchers beside it makes easy to obtain the data. It is located 1 km from the town of Blora, precisely in the Kajangan village, Blora district. In this research, the data source consists of: event, informant, and document.

The writer uses the following techniques to collect the data: observation, interview with physics teachers, students, curriculum of vice principal, the school principal, and documentation.

In this study the author at the time of data collection is always made: reduction data, display data (presentation data), and conclusion drawing/ verification.

To check the validity of the data, there are four techniques: persistence/ regularity of observation, triangulasi, examination peers through discussion, and detailed description.

FINDINGS AND DISCUSSION

1. Character-based Learning Plan of Physics

Every teacher at SMK Muhammadiyah 1 Blora should make learning plan consisting of the syllabus and lesson plans. The syllabus of physics was arranged at SMK Muhammadiyah 1 Blora by two teachers it is based on the subject before the school academic year. The Lesson plan of the subject of the school was arranged in one basic competency (KD) by integrating character education that is divided into several meetings to describe the syllabus.

A lesson plan consists of competency, basic competency, indicator, learning objective, learning material, learning strategy which is divided into some meetings. Every meeting of Physics subject in SMK Muhammadiyah 1 Blora consists of first activity, main activity (exploration, elaboration, confirmation), the last activity, learning method, tool/ learning resource, and also assessment methodology.

The result from interview with the Principal, Curriculum of Vise Principle, physics teacher, and also researcher observations made show of physics teachers make learning device. Before the new school year, there are school programs through IHT for teacher training in the preparation of syllabus and practice to makes RPP. Physics syllabus was made before the new school year by two teachers of physics, while the Learning Implementation Plan (RPP) is made by each teacher to gives appropriate character education with material delivered.

The similarity with Maknum research (2012) that is learning plan as SMK Curriculum. The different is on learning program arrangement that is used; it is based on productive program in Building Technique, containing many preparations for teacher and students, and also need a lot of time.

The similarity with Hamid research (2011) that is learning plan based on Faith, while the difference from Hamid research is the student activity sheet concludes with discussions regarding the development of the realm of faith and piety.

The similarity with Rodrigues,et al. research (2010) that is learning plan is needed to solve the less communication in the class between the teacher student, while the difference is on the learning method based on social point of view, history, and culture.

The similarity with Blas and Fernandes research (2008) that is learning plan to create communication between teacher and students, while the difference is on the learning method that is used, it is Physics method online for communication between teacher and students.

The similarity with Fatik and Madlazim research (2012) that is learning plan does not used laboratory with complete equipment, the difference is on the method that it used by Fatik and Madlazim is kind of interactive simulation base on discovery.

Learning plan is arranged with integrating character education and is well prepared before the school year to make learning can be focused and controlled so the goal can be realized.

2. Character-based Learning Implementation of Physics

Each meeting in physics learning consists of:

a. First activity consists of greeting from teacher, pray together, check attendance list, explain basic competency to students and the goal that will be reaching in those learning.

1). Greeting

The teacher greet students by saying "Assalaamu'alaikum Warohmatullahi Wabarokatuh" as opening greeting and one class who all students is Muslim answer "Waalaikum Salaam Warahmatullahi Wabarokatuh".

2). Pray together

Then teacher ask students to pray by saying Al-fatihah, and "Rodzitubbilai robbah wabil islami dienna, wabil muhammadin nabiyyau warosulla, robbi zidnii ilma warzuqnii fahmaa, amiiin".

3). Check the attendance list

After pray together, the teacher check students' attendance list. Ask students condition, if there is students do not come.

4). Explain about basic competency

The teacher explain the material, that is measure the length with ruler, caliper, and micrometer screw

5). The reach purposes

The teacher explains about purposes that will reach after learning process. And the purpose is students able to show the score of measure tool correctly and accurately based on regulation of the important letter written.

b. Main activity, consists of:

1). Exploration:

a). Question answer between teacher and students

The teacher ask students the kind of length measurement tool that students know and students answer the teacher question anthusiastic.

b). Demonstration

The teacher show and give example how to measure corectly and accuratly in using ruler, vernier caliper, and micrometer screw gauge.

c). Information of discussion

While students give attention, the teacher explains accurancy score from ruler, vernier caliper and micrometer screw gauge, student can ask the teacher, if they do not understand the material.

2). Elaboration: practice is done by students either individually or group. For example, students measure the thick of table by using

ruler, measure pencil diameter by using vernier caliper and measure the papper thick by using micrometer screw gauge.

Physics tools lab at SMK Muhammadiyah 1 Blora is quite complete, but there isn't laboratory. Practice tools stored in the cupboard which is located in the teacher room at the back, if you will practice, the tools bring into the classroom.

3). Confirmation: teacher explains and discuss the measurement result ttention athat has been done by students by using ruler, vernier caliper and micrometer screw gauge. Students give attention and make a note from the teacher explained.

c. The last activity

1). Teacher makes lesson summary that has been given by the teacher and she gives homework. For the example teacher make summary from measurement of length material, and gives homework about measurement result by using ruler, vernier caliper, and micrometer screw gauge.

2). Students give attention, make summary, and do homework.

3). Teacher close the lesson by saying "Wassalaamu'alaikum Warohmatullahi Wabarokatuh" and the students answer by saying "Wa'alaikum Salaam Warahmatullahi Wabarokatuh".

4). Teacher ask the students to pray by reading al-Asyr.

There is no Physics laboratory yet at SMK Muhammadiyah 1 Blora, but there are some practical tools such as adequate ruler, vernier caliper, micrometer screw gauge, AVOmeter, thermometer, balance, ticker timer, mechanics kit, measuring cup, stative, springs, kits hydrostatics, optics kit , electricity, and magnetism kit, calorimeter, amperemeters, power supplies, and oscilloscopes are available practice devices at the cupboard in the teacher room. If they will use, the tools are brought into the classroom.

The similarity with Maknum research (2012) is that the physics learning based on productive program can make the implementation for active student learning, directing the teacher as facilitator, and improve the child's mastery of physics concepts. While the difference in Physics learning is related with application in Building Technique subject, and in learning which is done is demand Physics practice equipment in completely.

The similarity with Hamid research (2011) is that to overcome the problems of physics learning that only contains formulas, exercises, and homework so that students feel that physics is difficult, unpleasant, and cannot give creativity to discover the physics laws through experiment. While the difference in method used is physics learning with Iqra method with generic approach is arranged to specify with tell the goals in the realm of faith and piety, also the student activity sheets (LKPD), concludes with discussions activity about the development of the realm of faith and piety.

The similarity with Rodrigues, research et al. (2010) stated that during the learning activity component and the context in which students do dialogic interaction with experiment. While the difference in the methods are analysed from social point of view, history, and culture.

The similarity with Blas and Fernandes research (2008) that is good learning communication between teacher and students, while the difference this study with Blas and Fernandes research (2008) that learning with online physics method for creating an online community that helps teachers and students have a virtual space where they can share knowledge through different kinds of chat activities and forums.

The similarity with Fatik and Madlazim is physics learning is done without laboratory with complete equipment. While the difference This study with Fatik and Madlazim research (2012) who use software development learning Phet Virtual Lab that is a website that provides physics learning simulation that can be downloaded for free for the benefit of the individual learning in classroom. The method in the form of interactive simulations on Phet Virtual Lab with a fun interactive simulations and discovery-based in the form of software and used to clarify the physical concept or phenomenon is explained by teacher. Phet Virtual Lab serves as a substitute for the actual lab because laboratory in real need of funds and complete equipments.

Learning Implementation that integrating with character education adapted with the material from teachers, its development through habituation in daily life.

3. Character-based Learning Evaluation of Physics

Students learning aassessment is using a combination of cognitive value (product assessment sheet), the affective value (affective assessment sheet), and psychomotor value (performance assessment sheet).

Cognitive evaluation consists of student academic rising, for example: students able to measure the thick of table by using ruler, measure pencil diameter by using vernier caliper, measure the thick of paper using micrometer screw gauge. The example of psycomotor evaluation is, students able to use ruler to measure the thick of the table correctly, students able to use vernier caliper to measure the diameter of pencil correctly, and students able to use micrometer screw gauge to measure the thick of paper correctly. Affective evaluation consists of checking attendance list, pray together, and make character development in learning, for example, good manner, respect to the others, honest care, think logical, and creative.

Assessment of student learning use cognitive values combine, there are students activity in the class, , individual or group tasks, practices, daily tests, and semester test. Character education can give is self-confident, independent, working, meticulous, logical thinking, creative, honest, and hard working. Affective value includes attendance, behavior while teaching and

learning activities. Character education that we can get discipline, respect for others, and good manners. Psychomotor Value includes the ability performance during practice, for example, can measure correctly using the tool length measuring ruler, vernier caliper, and micrometer screw gauge. Character education is thoroughly embedded, expensive logical, and creative.

The similarity with Maknum research (2012) that is to improve knowledge of concept (cognitive) for students, while the difference with Maknum research is need available physics practice equipment in complete. It is to improve knowledge and skill in finding Physics concept.

The similarity with Hamid research (2011) that is educate students to find concept, theory and Physics rules through discussion base on faith, while the difference with Hamid research is the discussions for the development of the realm of faith and piety.

The similarity with Rodrigues,et al. (2010) that is affective and psychomotor learning success which is done with dialogist interaction between teacher, students and experiment. While the difference in improving academic ability by Rodrigues et.all use learning method base on social, history and culture.

The similarity with Blas and Fernandes research (2008) that is improving ability and students' knowledge. While, the difference is in improving character. It is less attention because Blas and Fernandes research use Physics method online with chatting and forum activity.

The similarity with Fatik and Madlazim research (2012) that is Physic learning can use interactive directly and enjoyable, so can improve student character. While In Fatik and Madlazim research is less attention.

Learning evaluation consisting of three aspects, they are cognitive, affective, and psychomotor. So that the evaluation was conducted during the learning process and after learning is completed.

CLOSING

1. **Character-based Learning Plan of Physics**

   Learning plan consists of syllabus and lesson Plan (RPP) it is arranged by team physics teacher at school before the new school year, While RPP is arranged by each physic teacher with include character education base on material given and based on condition with school condition.

2. **Character-based Learning Implementation of Physics**

   Learning Implementation base on RPP that is made by teacher, with always gives character values base on learning material given provided by the teacher and familiarized in their daily lives.

3. **Character-based Learning Evaluation of Physics**

   Learning evaluation as information media for the reach of students learning result includes cognitive learning/ knowledge, affective/ attitude, and psychomotor/ skill. And also give information about teacher instructional

success in applying learning material. Evaluation was conducted during and after the learning process.

Learning media available, although not sufficient the physics lab. Storage lab tools in the back of the cupboard on the teachers' room. If you will use, the tools bring to the class. This is certainly less effective, so it is expected for the next principals should complement the physics learning with a laboratory.

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